

# **VISION 2025**

**(DRAFT DOCUMENT)**



## **OPTCL**

**ORISSA POWER TRANSMISSION CORPORATION LIMITED**  
**REGD. OFFICE: JANPATH, BHUBNAESWAR-751 022**

**DECEMBER 2008**

## **DEVELOPEMENT SCENARIO IN ORISSA**

Orissa is situated on the eastern coast of India and has a total area of approximately 1,52,200 sq.km constituting about 4.74 percent of India's landmass. As per 2001 census report, the population of Orissa is 36.8 million and with the prevailing growth rate, it may likely to rise to 45 million in the year 2025. Orissa is rich in minerals having approximately 98% of India's reserves of Chromites, 70% of Bauxite and 26% of Iron Ore. Orissa having 23% of India's coal reserve occupies second position in the country, next to Jharkhand. As per estimate of Geological Survey of India, the coal reserve in Orissa during 2005-06 was about 62 billion tonne.

The present utilization rate of minerals in Orissa is about 1%. The rich mineral resources such as coal, iron ore, bauxite, availability of infrastructure and conducive Government Policy have attracted a lot of private investors into Orissa in recent years entailing manifold mining, manufacturing, construction and power generation activities. Orissa has emerged as country's number one state in terms of total amount of investment committed. While the volume of envisaged projects in Orissa was Rs. 5,99,181 crore in 483 projects ahead of many developed provinces including Maharashtra and Gujarat, the state also tops the list of places in terms of project implementation in 2005, 2006 and 2007, as per the Study Report of Capex Database Centre. Orissa leads the States in implementation as about Rs. 3,08,589 crores investment (52%) was being implemented in the State. The rest 48% amounting to Rs.2,90,592 crores is in the "announcement" stage. The State Govt. has signed 49 MoUs with private investors including steel giants such as Posco, Tata and Arcelor-Mittal for setting up of steel production industries at an estimated investment of Rs. 1,97,000 Crore. Similarly 13 MoUs have been signed with IPPs to establish thermal power generating units in the State. The installed capacity by these IPPs are about 14,990 MW. In industrial sector the growth is taking place at the rate of 20%. The growth in service sector is around 10% and that of agriculture sector is about 2%. Electricity, the prime mover of the economy, has to grow at a rate of 10% for sustaining the growth in other core sectors of economy. A world-class power infrastructure is a prerequisite to sustain targeted GDP realization and consistent development of the urban and rural sectors. The growth in the electricity sector in Orissa requires huge investments in generation, transmission and distribution throwing up new challenges and at the same time opening up newer opportunities.

## **POWER SECTOR REFORMS IN ORISSA**

Orissa State Electricity Board (OSEB) was carrying out the integrated task of generation, transmission, distribution as well as supply of electricity in Orissa till 1996 when Orissa Electricity Reform Act, 1995 came into force primarily for structural, institutional and regulatory reorganization of the electricity industry and also to make avenues for participation of Private Sector Entrepreneurs in the electricity sector. In the process of unbundling of electricity sector in the State, Grid Corporation of Orissa Ltd. (GRIDCO), now called GRIDCO Limited, incorporated under the Companies Act, 1956 was vested with the transmission, distribution and retail supply business with effect from 01.04.1996. The hydro generation was assigned to Orissa Hydro Power Corporation (OHPC) and the only thermal plant at Ib remained with Orissa Power Generation Corporation (OPGC).

Further restructuring was made by reorganization of the Distribution and Retail Supply Business of GRIDCO during 1996-97 with the creation of four Strategic Business Units (SBU) or zones. To facilitate the process of privatization, the four distribution zones were converted into four companies i.e. CESCO, WESCO, NESCO and SOUTHCO which were incorporated on 19.11.1997 under the Companies Act, 1956 as wholly owned subsidiaries of GRIDCO. GRIDCO through a process of International Competitive Bidding disinvested 51% equity holding in NESCO, WESCO and SOUTHCO on 01.04.1999 and also disinvested 51% equity in CESCO on 01.09.1999, thus privatizing the entire Distribution and Retail Supply business in Orissa.

Subsequently with the enactment of the Electricity Act, 2003, the Government of Orissa through notification of a Transfer Scheme transferred the transmission business of GRIDCO and vested the same with Orissa Power Transmission Corporation Limited (OPTCL) with effect from 01.04.2005. OPTCL, registered on 29<sup>th</sup> March 2004 under the Companies Act, 1956, is a wholly owned Government Company. Under the Transfer Scheme, OPTCL has been notified as the State Transmission Utility (STU) and is also mandated to discharge the State Load Dispatch functions. Under the provisions of the Electricity Act, 2003, OPTCL is a deemed transmission licensee. It undertakes the activities of transmission of electricity in the State of Orissa under regulatory control of Orissa Electricity Regulatory Commission (OERC) and also in compliance of the provision of the Orissa Electricity Reform Act, 1995 and Electricity Act, 2003. OPTCL commenced its commercial operation from the FY 2005-06.

# ORISSA POWER SECTOR AT A GLANCE

## 2007-08

|                                                |                               |
|------------------------------------------------|-------------------------------|
| Installed capacity in the state                | 2816.475 MW                   |
| Hydro                                          | 1936.475 MW                   |
| Thermal                                        | 880.000 MW                    |
| CPPs connected to Orissa Grid                  | 2660.000 MW                   |
| Orissa Share from Central Sector Generation    | 1034.800                      |
| Energy Generation in the state                 | 17540 MU                      |
| Energy consumption                             | 17211 MU                      |
| Peak Demand                                    | 2906 MW                       |
| Per capita Energy consumption                  | 468 units                     |
| Grid sub stations including Switching-Stations | 86 Nos                        |
|                                                | 400/220/132/33 KV - 1 No.     |
|                                                | 220 KV - 2 Nos                |
|                                                | 220/132 KV - 1 No.            |
|                                                | 220/132/33 KV -11 Nos         |
|                                                | 220/33 KV - 4 Nos             |
|                                                | 132/33 KV -50 Nos             |
|                                                | 132/33/25 KV - 1 No           |
|                                                | 132/33/11 KV - 4 Nos          |
|                                                | 132/11 KV - 2 Nos             |
|                                                | 132 KV Sw. Stn. -10 Nos       |
| Length of 400 kV lines (As on 01.11.2008)      | 442.703 Ckt-km                |
| Length of 220 kV lines (As on 01.11.2008)      | 4961.395 Ckt-km               |
| Length of 132 kV lines (As on 01.11.2008)      | 4879.877 Ckt-km               |
| Transmission loss                              | 4.5% to 5% (4.82% in 2007-08) |
| AT&C loss                                      | 40.90% (2007-08)              |
| Distribution loss                              | 37.50% (2007-08)              |
| No. of consumers (As on 30.09.2007)            | 25.00 lakh                    |
| Length of 33 kV line                           | 10840 Ckt-km                  |
| Length of 11 kV line                           | 61780 Ckt-km                  |
| Length of LT line                              | 61443 Ckt-km                  |

## Electricity Act, 2003 relating to Transmission Sector

*Section 39 (2)* of the Electricity Act, 2003 specifies that the functions of the STU shall be -

- (a) to undertake transmission of electricity through intra-State transmission system;
- (b) to discharge all functions of planning and coordination relating to intra-state transmission system with:
  - (i) Central Transmission Utility;
  - (ii) State Governments;
  - (iii) Generating Companies;
  - (iv) Regional Power Committees;
  - (v) Authority;
  - (vi) Licensees;
  - (vii) Any other person notified by the State Government in this behalf;
- (c) to ensure development of an efficient, coordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to the load centres;
- (d) to provide non-discriminatory open access to its transmission system for use by any licensee or generating company or any consumer.

*Section 40* of the said Act specifies the duty of a transmission licensee to build, maintain and operate an efficient, coordinated and economical inter-State transmission system or intra-State transmission system, as the case may be.

## **National Electricity Policy (NEP) relating to Transmission Sector**

The key features of National Electricity Policy notified on 12.02.2005 by GOI with regard to STU as mentioned in clause 5.3 are as under:

- The Transmission System requires adequate and timely investments and also efficient and coordinated action to develop a robust and integrated power system for the country.
- Keeping in view the massive increase planned in generation and also for development of power market, there is need for adequately augmenting transmission capacity. While planning new generation capacities, requirement of associated transmission capacity would need to be worked out simultaneously in order to avoid mismatch between generation capacity and transmission facilities.
- The policy emphasizes the following to meet the above objective:
  - To facilitate orderly growth and development of the power sector and also for secured and reliable operation of the grid, adequate margins in transmission system should be created. The transmission capacity would be planned and built to cater to both the redundancy levels and margins keeping in view international standards and practices. It is estimated that reliability and operation margins would be generally of the order of 25 – 30% of the transmission capacities required for meeting the firm transmission needs of the long-term commitments. This level of redundancy will generally provide sufficient margins for trading needs. Further it should be ensured that the present network deficiencies do not result in unreasonable transmission loss compensation requirements.
  - Making available electricity to all households in next five years, supply of reliable and quality power of specified standards in an efficient manner and at reasonable rates, increasing the per capita availability of electricity to over 1000 units by 2012 and minimum lifeline consumption of 1 unit/household/day as a feel-good by the year 2012.

- For the above purpose, the Govt. of India has launched a massive rural electrification programme under the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) in which unelectrified 17895 villages and 40706 habitations in Orissa covering 32.30 lakh BPL and 16.30 lakh APL families have been targeted to be supplied with electricity by the end of 2009. Besides, the Govt. of Orissa has launched Biju Grama Jyoti Yojana (BGJY) to electrify about 4100 habitations having population below 100. Implementation of the two schemes have already been started in the state of Orissa. The load growth due to these two schemes will be around 900 MW. This requires for immediate planning for development of a robust and integrated intra-state transmission system with adequate and timely investments to cater to the huge demand created under the above two schemes.

- The NEP emphasizes to ensure that underutilized generation capacity is facilitated to generate electricity for its transmission from surplus regions to deficit regions. With the proposed thirteen IPPs as well as existing and upcoming CGPs, Orissa is likely to sustain its status of a power surplus state in coming years. In the open access and trading regime, for evacuation of the surplus power to deficit region, intra-state network expansion should be planned and implemented in tandem with the regional requirement keeping in view the anticipated transmission needs that would be incident on the system. The CTU and STU need to act towards achievement of the shared objective of eliminating transmission constraints in a cost effective manner.

## **National Tariff Policy (NTP) relating to Transmission Sector**

The objectives are,

- (a) Ensure availability of electricity to consumers at reasonable and competitive rates;
- (b) Ensure financial viability of the sector and attract investments;
- (c) Promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;
- (d) Promote competition, efficiency in operations and improvement in quality of supply.

The NTP, in so far as transmission is concerned, seeks to achieve the following objectives:

- Ensuring optimal development of the transmission network to promote efficient utilization of generation and transmission assets in the country;
- Attracting the required investments in the transmission sector and providing adequate returns.



## CHALLENGES FOR OPTCL

- To have adequate network to cater to sudden load growth in the state.
- To provide adequate network in remote areas to cater to the requirement of consumers being inducted through Rajiv Gandhi Gramin Vidyut Yozana (RGGVY) and Biju Gramya Jyoti Yozana (BGJY).
- Facing the future competition from Private Sectors.
- Old and over loaded transmission network with frequent insulator failure, jumper & conductor snapping and bursting of equipment such as current transformers, Potential transformers and Lightning Arresters.
- Moving small CGPs connected at 33 kV and 11 kV.
- Reducing Transmission loss which is hovering over around 4.5% to 5%.
- Time and cost efficient Project completion.
- Mitigating ROW issues.
- Developing a strong balance sheet for mobilization of funds to meet the huge investment requirements in transmission sector including financing for unviable projects in certain areas.
- Having a skilled work force.

# VISION

OPTCL ranks one among the leading Transmission Utilities in India, transmitting quality, reliable and SECURED power with minimum transmission loss at a competitive price.

# MISSION

1. Transmission of power in large quantity with affordable price as per the expectation of customers, Government of Orissa and OERC.
2. Increase transmission network need based to meet demand of the State in 2025.
3. Develop a portfolio of Intra State and some Inter State transmission assets in national market including business expansion for evacuation of power outside the state in collaboration with PGCIL and others.
4. Adoption of best Construction and O&M practices supported by system driven processes enabled by cutting age IT solutions.
5. Diversification of business in providing construction and maintenance services and providing consultancy in Telecommunication and other emerging areas so as to achieve optimum utilization of assets and generation of additional revenue.
6. Develop skilled and satisfied human resources, fostering a service oriented attitude to its customers/stake holders and empowered to meet customer need in the changing scenarios.
7. Building Research and Development wing for adoption of new technology.
8. Discharge the social responsibility with commitment on Environment Protection, Health, Safety, Energy conservation and Community Development.

# CORE VALUES

- Commitment for People Development
- Focus on team work and business excellence
- Thrust on Customer focus.
- Strive for a standard of performance driven by Quality and Innovation
- Demonstrate a responsible, sincere and fair, and trust worthy corporate culture
- Care for Environment and Society

# Strategies

- Growth supported with Technology Adoption
- Adoption of Good Construction Practices
- Pursuing Good Operating and maintenance Practices
- Leveraging use of IT and Telecommunication
- Focus on People Development
- Financial Management for Funds mobilisation and Financial Control & Reporting
- Promoting Research and Development
- Practicing Good Corporate Governance
- Discharging the Corporate Social Responsibility

# Strategic Initiatives - Construction Practices

1. Technology adoption through satellite survey & GIS mapping, adoption of tall and multi-circuit tower, adoption of tubular pole and introduction of Flexible AC Transmission System (FACTS)
2. Installation of Super Grid, Intelligent Grid and GIS Grid S/S in important areas and converting radial sub stations to ring system
3. Procurement of modern testing equipments such as DGA, FRA and TAN delta kits.
4. Setting up Grid Sub-stations nearer to load centres due to RGGVY & BGJY
5. Adopting modern construction management techniques
6. Initiation of Land Corridor plan for new project to facilitate future expansion.
7. Improvement of Health, Safety and Environment-(HSE) in construction sites.
8. Imparting training on Quality, Cost and Time Management of Projects.
9. Improving Field Quality Plan.
10. Standardisation of Engineering designs and practices

## Strategic Initiatives - O & M Practices

1. Adoption of live-line maintenance technique to bring down the outage time
2. Diagnostic analysis of old equipment and moving towards more preventive
3. Procurement of modern testing equipments such as DGA, FRA and TAN  
delta kits.maintenance
4. Engagement of emergency restoration gang
5. Introduction of condition based monitoring cell
6. Adoption of good inventory management standards
7. Introduction of a well planned R&M Scheme for existing assets after  
evaluation thereof.
8. Transmission System availability higher than the CERC norms.
9. Modernization and Renovation of outlived Sub-stations and lines.
10. Load Management for bringing down the transmission loss and improving  
voltage profile.

## **Strategic Initiatives – INFORMATION TECHNOLOGY**

Information advantage plays crucial role for the organization to survive, perform and excel under competitive and regulatory regimes. IT can render support to a large extent in bringing responsibility and accountability through dependable Information Systems having in-built reminder systems and measuring tools. These systems work on and reason through vast amounts of enterprise data which is humanly impossible to deal with. IT can thus go long way in materializing Management's vision in general.

The strategic initiatives under IT vision are as the following :

1. Support every operational level business function of the organization through implementation of Enterprise Resource Planning(ERP).
2. Help Finance Management in publishing Quarterly Accounts in addition to timely publishing of Annual Accounts.
3. Support implementation of proactive Maintenance of EHT O&M function. Strengthen EHT Sub-station by way of introducing Sub-station automation Systems.
4. Support Construction projects in minimizing cost and time over run contingencies by way of automation support in Projects Management.  
Support EHT Construction Management with automation tools viz., economical Tower spotting tool, Geographical Information System tools for EHT Network, Drawing Management tools etc.
5. End to end automation support to realize intelligent GRIDS.
6. Provide Energy trading intelligence through online Trading Systems.
7. Fulfill the Statutory responsibility of the SLDC in publishing monthly Energy Accounting Schedules and Settlements thereof.
8. Render the financial and Physical information about OPTCL's functioning as required by 'Regulatory Information Management System'(RIMS).
9. Build Data Warehouse to support Strategic management decision.
10. Build Knowledge Body of the organization.

## **Strategic Initiatives - TELECOMMUNICATION**

1. Enhancement of existing interface points and addition of new interface points in OPTCL system to accommodate data of the upcoming IPP/CGP/CGS etc.
2. Provision of logic earth & surge arrestors at different Grid sub stations.
3. All Grid S/s to be covered under ULDC Project scope for implementation of SCADA.
4. Present Microwave links to be vacated & switched over to optic fibre links for utilization as data concentrator points.
5. Analog carrier communication systems to be replaced by digital PLCC version in phased manner to ensure high speed data communication, transfer tripping and facsimile service between remote sub-stations and control centres.
6. Implementation of state-of-the-art substation automation of Micro SCADA
7. Preparedness for live line maintenance of all OPGW lines in OPTCL.
8. Expansion OPGW network to expand the existing network for integration of new substations and entering into Telecom business by leasing out spare capacity.
9. Provision of inter-facing arrangement between SLDC and District Control Centres of Distribution Companies.
10. Implementation of carrier inter tripping scheme.



## **Strategic Initiatives - HR DEVELOPMENT**

1. Assessment of manpower requirement and formulation of a suitable organization structure.
2. Ensuing growth and development of employee by recruiting and nurturing talents through systematic training, providing opportunities for developing new capabilities.
3. Creating an atmosphere for high commitment of people by emotional sharing of vision and sharing concern for people development and satisfaction where people will be treated respectfully and fairly, by providing fair and equitable treatment to all employees.
4. Developing and sustaining work standard compatible to ultimate purpose of the Organization, striving to flourish right kind of work culture, encouraging people for taking initiatives and being creative in pursuit of the organizational mission through a culture of strong performance supported by a recognition and reward system.
5. Protecting health and safety of all employees to create a safe work place, Delegation of authority and fixing responsibility with regard to target and achievement.
6. Implementing a well laid out People Development program through Training, Skill Development, Leadership Development and Engagement surveys.
7. Introducing Human Resource Audit
8. Career development of all employees
9. Harmonising interdepartmental relationship
10. Introducing modern training policies and practices

## **Strategic Initiatives - FINANCE**

A technically superior transmission system will contribute to the financial soundness of the Corporation leading to a Strong Balance Sheet. The initiatives which will be pursued both in short-term and long-term for finance and accounts will include the following:

1. Implementation of an in-house developed accounting software to expedite accounts finalization and publication of annual accounts within the statutory time limit.
2. Implementation of ERP, reporting of all financial and accounting information on real time basis resulting in reliable MIS for effective decision making and efficient management of financial resources resulting in improved financial strength.
3. Better management of receivables, payables and capital expenditure.
4. Periodical review of loan portfolio to minimize the cost of loan through swapping or otherwise.
5. Timely mobilization of funds to meet the huge investment requirement in the transmission system with more thrust on cost of fund/ borrowing. Alternative funding options such as private placement of bond, external commercial borrowing to be explored.
6. Financial restructuring so as to improve the Debt Equity Ratio.
7. Exploring revenue streams from non-core business through optimal use of the transmission assets.
8. Monitoring of inventory Management

## **Strategic Initiatives - RESEARCH & DEVELOPMENT**

Research & Development Cell consisting personnel from Engineering, Finance, IT and HR disciplines will be opened.

1. Extensive visit to the different sister organizations and interacting with their R & D department
2. Taking part in different seminars actively and scanning of journals, magazines, internet facilities with membership of different institutions to establish a Knowledge Management and Regulatory Research.

## Strategic Initiatives - CORPORATE GOVERNANCE

The Corporation will have its Governance Policies to promote corporate fairness, transparency, professionalism and accountability in all aspects of its operation in the best interest of the various stakeholders. The Corporate Governance practices being followed or to be followed, will not be merely an adherence to any legal and regulatory framework but will aim in achieving excellence through adoption of sound corporate practices which will pave the way for its long-term success.

The Corporation will make continuous efforts to adopt the best practices in Corporate Governance and will focus to accomplish its vision of becoming one among the leading Transmission Utilities in India. The Corporate Governance practices to be pursued shall include the following:

1. Formulation of Policy Manuals covering all functions including delegation of power.
2. Preparation and implementation of procurement policy and procedures for award of contracts with major thrust on expeditious and decentralized decision making coupled with accountability and responsibility.
3. Constitution of Committees of Board to deal with matters relating to audit, projects, contracts, HR etc.
4. The Corporation has its own website which will be updated in time so that all information and latest updates and announcements can be hosted in the website for access by the public.

## Strategic Initiatives - CORPORATE SOCIAL RESPONSIBILITY (CSR)

OPTCL, as a Transmission Licensee and a State Transmission Utility, has an important role to play in the social development issues in course of its business operation. The social value of electricity has been increasing in day-to-day life and as the society is becoming more energy dependent. OPTCL is to satisfy the human needs not only by making available quality and uninterrupted power which is its core function but also will have the responsibility of addressing the social needs while carrying out its business operation as our operation has its impact on society and the environment. As a good corporate citizen, the Corporation is to take care of the community which gets affected in course of our transmission business. OPTCL has the objective of supporting the community by extending wide range of social, economic, educational, health and other welfare activities. The Corporation shall work in providing reasonable facilities to improve the lifestyle of the community in and around the area of operation of the Corporation. In addition, OPTCL is aware of its role and responsibility for environment protection. In addition to the environment protection measures undertaken for laying transmission lines, the Corporation will go for adequate plantation in its area of operation across the State.

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# General

1. The Strategic Initiatives shall be further detailed from time to time.
2. Detailed Plans shall be made for implementing the Vision and Mission.
3. This document shall be subject to periodic review in line with the evolving business scenario.

## **ANNEXURE : I**

|    | Particulars                         | Year        |              |
|----|-------------------------------------|-------------|--------------|
|    |                                     | 2004-05     | 2021-22      |
| 1. | Energy Requirement at Generator Bus | 5,59,884 MU | 19,14,508 MU |
| 2. | Peak Demand                         | 90,221 MW   | 2,98,253 ,W  |
| 3. | Energy consumption                  | 3,88,175 MU | 15,93,266 MU |
| 4. | T & D Loss                          | 30.67 %     | 16.81 %      |
| 5. | Energy Consumption growth rate      | 6.99 %      | 7.04 %       |
| 6. | Energy Requirement growth rate      | 6.72 %      | 6.58 %       |
| 7. | Peak Demand growth rate             | 5.85 %      | 6.45 %       |

Source : 17<sup>th</sup> EPS, CEA

## **ANNEXURE : II**

|    | Particulars                         | Year      |           |
|----|-------------------------------------|-----------|-----------|
|    |                                     | 2004-05   | 2021-22   |
| 1. | Energy Requirement at Generator Bus | 13,856 MU | 63,098 MU |
| 2. | Peak Demand                         | 2,237 MW  | 10,074 MW |
| 3. | Energy consumption                  | 7,815 MU  | 53,633 MU |
| 4. | T & D Loss                          | 43.60 %   | 15%       |
| 5. | Energy Consumption growth rate      | 9.18 %    | 11.39 %   |
| 6. | Energy Requirement growth rate      | 3.59 %    | 1.05 %    |
| 7. | Peak Demand growth rate             | 11.58 %   | 9.74 %    |
|    |                                     |           |           |

Source : 17<sup>th</sup> EPS, CEA

**ANNEXURE : III**  
**EXISTING SUB-STATIONS OF OPTCL**

| Sl.no                              | S/S Name      | kV Level     | Y-O-C        | S/S Capacity (No.x MVA)                             | Total MVA |
|------------------------------------|---------------|--------------|--------------|-----------------------------------------------------|-----------|
| <b>Berhampur (0&amp; M) Circle</b> |               |              |              |                                                     |           |
| Berhampur (0 & M) Division         |               |              |              |                                                     |           |
| 1                                  | Balugaon      | 132/33kV     | 1991         | 2x20MVA,132/33KV                                    | 40        |
| 2                                  | Berhampur     | 132/33/11kV  | 1964         | 1x40+1x20MVA,132/33KV<br>1x12.5MVA,132/11KV         | 72.5      |
| 3                                  | Chhatrapur    | 132/33kV     | 1982         | 2x20MVA,132/33KV                                    | 40        |
| 4                                  | Digapahandi   | 132/33kV     | 2004         | 1x20+1x12.5MVA,132/33KV                             | 32.5      |
| 5                                  | Ganjam        | 132/33kV     | 1967         | 2x12.5MVA,132/33KV                                  | 25        |
| 6                                  | Mohana        | 132/33kV     | 1973         | 1x12.5MVA,132/33KV<br>1x5MVA,132/33KV               | 17.5      |
| 7                                  | Narendrapur   | 220/132/33kV | 1999         | 2x160MVA,220/132KV<br>1x40+1x20Mva.132/33KV         | 380       |
| Bhanjanagar (O & M ) Division      |               |              |              |                                                     |           |
| 8                                  | Aska          | 132/33kV     | 1975         | 2x40MVA,132/33KV                                    | 80        |
| 9                                  | Bhanjanagar   | 220/132/33kV | 1984         | 1x160+1x100MVA,220/132kV<br>1x12.5+1x16MVA,132/33kV | 288.5     |
| 10                                 | Phulbani      | 132/33kv     | 1986         | 1x12.5MVA,132/33kV<br>2x7.5MVA,132/33kV             | 27.5      |
| <b>Burla (O &amp; M) Circle</b>    |               |              |              |                                                     |           |
| Bolangir (O & M ) Division         |               |              |              |                                                     |           |
| 11                                 | Bargarh       | 132/33kV     | 1979         | 2x40MVA,132/33kV                                    | 80        |
| 12                                 | Bolangir      | 132/33kV     | 1981         | 2x40MVA,132/3kV                                     | 80        |
| 13                                 | Patnagarh     | 132/33kV     | 2001         | 1x20+1x12.5MVA,132/33kV                             | 32.5      |
| 14                                 | Sonepur       | 132/33kV     | 2001         | 2x12.5MVA,132/33kV                                  | 25        |
| Burla (O & M) Division             |               |              |              |                                                     |           |
| 15                                 | Brajarajnagar | 132/33/11kV  | 1969         | 3x20MVA,132/33kV<br>1x12.5MVA,132/11kV              | 72.5      |
| 16                                 | Budhipadar    | 220/132/33kV | 1995         | 2x160MVA,220/132kV<br>1x20MVA,132/33kV              | 340       |
| 17                                 | Jharsuguda    | 132/11kV     | 1958         | 1x20MVA,132/33kV<br>1x12.5MVA,132/11kV              | 32.5      |
| 18                                 | Katapalli     | 220/132/33kV | 2007<br>2004 | 2x100MVA,220/132kV<br>2x20MVA,132/33kV              | 240       |
| 19                                 | Rairakhole    | 132/33kV     | 2001         | 2x12.5MVA,132/33kV                                  | 25        |
| 20                                 | Sambalpur     | 132/33kV     | 1988         | 2x31.5MVA,132/33kV                                  | 63        |



| Rourkela (O & M) Division |            |             |      |                                        |       |
|---------------------------|------------|-------------|------|----------------------------------------|-------|
| 21                        | Barkote    | 220/33kV    | 2001 | 1x20MVA,220/33kV                       | 20    |
| 22                        | Chhend     | 132/33kV    | 1999 | 2x40MVA,132/33kV                       | 80    |
| 23                        | Rajgangpur | 132/33kV    | 1973 | 2x40MVA,132/33kV                       | 80    |
| 24                        | Rourkela   | 132/33/25kv | 1958 | 4x35MVA,132/33kV<br>1x12.5MVA,132/25kV | 152.5 |
| 25                        | Sundargarh | 132/33kV    | 2003 | 2x20MVA,132/33kV                       | 40    |
| 26                        | Tarkera    | 220/132kv   | 1981 | 4x100MVA,220/132kV                     | 400   |
|                           |            |             |      |                                        |       |

As on 01.01.09

| Sl.No.                         | S/S Name      | kV Level         | Y-O-C        | S/S Capacity (No.x MVA)                                        | Total MVA |
|--------------------------------|---------------|------------------|--------------|----------------------------------------------------------------|-----------|
| <b>Chainpal(O&amp;M)Circle</b> |               |                  |              |                                                                |           |
| Chainpal(O&M)Division          |               |                  |              |                                                                |           |
| 27                             | Angul         | 132/33kV         | 1996         | 1x20+1x12.5MVA, 132/33kV                                       | 32.5      |
| 28                             | Boinda        | 132/33kV         | 2003         | 2x12.5,132/33kV                                                | 25        |
| 29                             | Chainpal      | 132/33kV         | 1072         | 2x20MVA,132/33kV<br>1x12.5MVA,132/33kV                         | 52.5      |
| 30                             | Dhenkanal     | 132/33kV         | 1982         | 1x40+1x20MVA,132/33kV                                          | 60        |
| 31                             | Kamakhyanagar | 132/33kV         | 1999         | 2x12.5,132/33kV                                                | 25        |
| 32                             | Meramundali   | 400/220/132/33kV | 2005<br>2002 | 2x315MVA,400/220kV<br>2x100MVA,220/132kV<br>1x12.5MVA,132/33kV | 842.5     |
| <b>Rengali(O&amp;M)Circle</b>  |               |                  |              |                                                                |           |
| 33                             | Rengali       | 220/33kV         | 1997         | 1x20MVA,220/33Kv                                               | 20        |
| <b>Cuttack(O&amp;M)Circle</b>  |               |                  |              |                                                                |           |
| Bhubaneswar(O&M)Division       |               |                  |              |                                                                |           |
| 34                             | Bhubaneswar   | 132/33kV         | 1979         | 3x40MVA,132/33kV                                               | 120       |
| 35                             | Chandaka      | 220/132/33kV     | 1989         | 3x100MVA,220/132kV<br>2x40MVA,132/33kV                         | 380       |
| 36                             | Khurda        | 132/33kV         | 1969         | 3x40MVA,132/33kV                                               | 120       |
| 37                             | Mendhasala    | 400/220kV        | 2008         | 2x315MVA,400/220kV                                             | 630       |
| 38                             | Nayagarh      | 220/33kV         | 1993         | 3x20MVA,220/33kV                                               | 60        |
| 39                             | Nimapara      | 132/33kV         | 1996         | 3x12.5MVA,132/33kV                                             | 37.5      |
| 40                             | Puri          | 132/33kV         | 1984         | 2x31.5MVA, 132/33kV                                            | 63        |
| 41                             | Ranasinghput  | 132/33kV         | 1997         | 2x40MVA,132/33kV                                               | 80        |
| Choudwar(O&M)Division          |               |                  |              |                                                                |           |
| 42                             | Bidanasi      | 220/132/33kV     | 1993         | 2x100MVA,220/132kV<br>2x40MVA,132/33kV                         | 280       |
| 43                             | Chandikhole   | 132/33kV         | 2003         | 3x20MVA,132/33kV                                               | 40        |
| 44                             | Choudwar      | 132/33/11kV      | 1956         | 1x40+1x20MVA,132/33kV<br>1x10MVA,132/11kV                      | 70        |

|                                   |               |              |              |                                                               |       |
|-----------------------------------|---------------|--------------|--------------|---------------------------------------------------------------|-------|
| 45                                | Cuttack       | 132/33kV     | 1984         | 2x40MVA,132/33kV                                              | 80    |
| 46                                | ICCL          | 132kV        | 1988         | Switching Station                                             |       |
| 47                                | Jagatsinghpur | 132/33kV     | 1996         | 2x20MVA,132/33kV                                              | 40    |
| 48                                | Kendrapara    | 132/33kV     | 1979         | 1x40+1x20+1x12.5MVA,132/33kV                                  | 72.5  |
| 49                                | Nuapatna      | 132/33kV     | 1994         | 1x20+1x12.5MVA, 132/33kV                                      | 32.5  |
| 50                                | Paradeep      | 220/132/33kV | 1981         | 1x100MVA,220/132kV<br>2x20MVA,132/33kV                        | 40    |
| 51                                | Pattamundai   | 132/33kV     | 1997         | 1x20+1x12.5MVA, 132/33kV                                      | 32.5  |
| 52                                | Salipur       | 132/33kV     | 2006         | 2x12.5,132/33kV                                               | 25    |
| <b>Jajpur Road(O&amp;M)Circle</b> |               |              |              |                                                               |       |
| Balasore(O&M)Division             |               |              |              |                                                               |       |
| 53                                | Balasore      | 220/132/33kV | 1991         | 2x100MVA,220/132kV<br>2x40MVA,132/33kV<br>1x12.5MVA, 132/33kV | 292.5 |
| 54                                | Baripada      | 132/33kV     | 1984         | 2x31.5MVA, 132/33kV                                           | 63    |
| 55                                | Bhadrak       | 220/132/33kV | 2008<br>1983 | 1x100MVA,220/132kV<br>2x40MVA,132/33kV                        | 180   |

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| Sl. No.                             | S/S Name     | KV Level     | Y-O-C | S/S Capacity (No.x MVA)                                   | Total MVA |
|-------------------------------------|--------------|--------------|-------|-----------------------------------------------------------|-----------|
| 56                                  | Jaleswar     | 132/33kV     | 1991  | 2x20MVA,132/33kV<br>1x12.5MVA,132/33kV                    | 52.5      |
| 57                                  | Rairangpur   | 132/33kV     | 1981  | 1x20MVA,132/33kV<br>1x12.5MVA,132/33kV                    | 32.5      |
| 58                                  | Soro         | 132/32kV     | 1997  | 2x20MVA,132/33kV                                          | 40        |
| Jajpur Road ( O & M ) Division      |              |              |       |                                                           |           |
| 59                                  | Duburi       | 220/132/33kv | 1989  | 3x100MVA,220/132kV<br>1x40MVA,220/33kV<br>1x5MVA,132/33kV | 345       |
| 60                                  | Duburi (New) | 400/220kV    | 2005  | 2x315MVA,400/220kV                                        | 630       |
| 61                                  | Jajpur Road  | 132/33kV     | 1969  | 1x40+2x20MVA, 132/33kV                                    | 80        |
| 62                                  | Jajpur Town  | 132/33kV     | 1998  | 1x40+1x20MVA,132/33kV                                     | 60        |
| 63                                  | Kalarangi    | 132/33kV     | 1998  | 2x12.5MVA,132/33kV                                        | 25        |
| Joda ( O & M ) Division             |              |              |       |                                                           |           |
| 64                                  | Bolani       | 132/11kV     | 1995  | 2x10MVA,132/11kV                                          | 20        |
| 65                                  | Joda         | 220/132/33kV | 1959  | 2x100MVA,220/132kV<br>3x20+1x12.5MVA,132/22kV             | 272.5     |
| 66                                  | Polasponga   | 132/33kV     | 1981  | 3x20MVA,132/33kV                                          | 60        |
| <b>Jeypore ( O &amp; M ) Circle</b> |              |              |       |                                                           |           |
| Jayanagar ( O & M ) Division        |              |              |       |                                                           |           |
| 67                                  | Balimela     | 220/33kV     | 2007  | 2x20MVA,220/33kV                                          | 40        |
| 68                                  | Jayanagar    | 220/132/33kV | 1980  | 2x100MVA,220/132kV<br>1x20+1x12.5MVA,132/33kV             | 232.5     |

|                                           |                 |              |      |                                          |      |
|-------------------------------------------|-----------------|--------------|------|------------------------------------------|------|
| 69                                        | Sunabeda        | 132/33/11kV  | 1964 | 2x12.5MVA,132/33kV<br>1x12.5MVA,132/11kV | 37.5 |
| 70                                        | Tentulikhunti   | 132/33kV     | 1986 | 2x12.5MVA,132/33kV                       | 25   |
| <b>Kesinga ( O &amp; M ) Division</b>     |                 |              |      |                                          |      |
| 71                                        | Junagarh        | 132/33kV     | 2001 | 2x12.5MVA,132/33kV                       | 25   |
| 72                                        | Kesinga         | 132/33kV     | 1982 | 2x20MVA,132/33kV                         | 40   |
| 73                                        | Kharier         | 132/33kV     | 1995 | 2x20MVA,132/33kV                         | 40   |
| 74                                        | Saintala        | 132/33kV     | 1989 | 1x12.5MVA,132/33kV<br>1x10MVA,132/33kV   | 22.5 |
| 75                                        | Akhusingh       | 132kV        | 2001 | Switching Station                        |      |
| 76                                        | Parlakhemundi   | 132/33kV     | 2001 | 2x12.5MVA,132/33kV                       | 25   |
| 77                                        | Rayagada        | 132/33kV     | 1962 | 2x12.5MVA,132/33kV                       | 25   |
| 78                                        | Therubali       | 220/132/33kV | 1974 | 2x100MVA,220/132kV<br>2x12.5MVA,132/33kV | 225  |
|                                           |                 |              |      |                                          |      |
| <b>INDUSTRIAL LILO SWITCHING STATIONS</b> |                 |              |      |                                          |      |
| 79                                        | Shyam DRI       | 132kV        | 2006 | Switching station                        |      |
| 80                                        | Hindi Metals    | 132kV        | 2007 | Switching station                        |      |
| 81                                        | Arati Steels    | 132kV        | 2005 | Switching station                        |      |
| 82                                        | Maheswari Ispat | 132kV        | 2006 | Switching station                        |      |
| 83                                        | Rawmet Ferrous  | 132kV        | 2006 | Switching station                        |      |
| 84                                        | OCL             | 132kV        | 2008 | Switching station                        |      |
| 85                                        | Arya Iron       | 132kV        | 2008 | Switching station                        |      |
| 86                                        | Vedant Alumina  | 132kV        | 2006 | Switching station                        |      |

As on 01.01.09

## **ANNEXURE : IV**

### **ONGOING PROJECTS OF OPTCL**

|   | <b>Name of S/S</b> | <b>Voltage Level</b> | <b>Capacity</b>        |
|---|--------------------|----------------------|------------------------|
| 1 | Bolangir           | 220/132/33kV         | ( 2 x 100 + 12.5 ) MVA |
| 2 | Basta              | 132/33kV             | 2 x 12.5 MVA           |
| 3 | Karanja            | 132/33kV             | 2 x 12.5 MVA           |
| 4 | Barpali            | 132/33kV             | 2 x 12.5 MVA           |
| 5 | Akhusingh          | 132/33kV             | 2 x 12.5 MVA           |
| 6 | Anandpur           | 132/33kV             | 2 x 20 MVA             |
| 7 | Badagada           | 132/33kV             | 2 x 20 MVA             |
| 8 | Phulnakhara        | 132/33kV             | 2 x 20 MVA             |

|   | <b>Major Lines</b>                   | <b>Length ( Ckt Km )</b> |
|---|--------------------------------------|--------------------------|
| 1 | 400 kV Meramundali-Mendhasal DC Line | 201                      |
| 2 | 400 kV Meramundali-duburi DC Line    | 192                      |
| 3 | 400 kV Ib-Meramundali DC Line        | 470                      |
| 4 | 220 kV Mendhasal-Bidanasi DC Line    | 62                       |
| 5 | 220 kV Budhipadar-Bolangir DC Line   | 358                      |

As on 01.01.09

## ANNEXURE : V

### APPROVED NEW PROJECTS OF OPTCL

|    | Name of S/S                  | Voltage Level           | Capacity                  |
|----|------------------------------|-------------------------|---------------------------|
| 1  | Bolangir                     | 400/220kV               | 2 x 315MVA                |
| 2  | Keonjhar                     | 400/220kV               | 2 x 315MVA                |
| 3  | Sundargarh                   | 400/220kV               | 2 x 315MVA                |
| 4  | Satellite S/S at Meramundali | 400kv                   |                           |
| 5  | Karadagadia                  | 220kV/132kV<br>132/33kV | 2 x 160 MVA<br>2 x 20 MVA |
| 6  | Jhatsuguda                   | 220/132kV               | 2 x 100 MVA               |
| 7  | Kesinga                      | 220/132kV               | 2 x 100 MVA               |
| 8  | Keonjhar                     | 220/33kV                | 2 x 40 MVA                |
| 9  | Kuanrmunda                   | 220/132/33kV            | 2 x 100 MVA               |
| 10 | Bonai                        | 220/33kV                | 2 x 40 MVA                |
| 11 | Purushottampur               | 132/33kV                | 2 x 12.5 MVA              |
| 12 | Chandpur                     | 132/33kV                | 2 x 12.5 MVA              |
| 13 | Banki                        | 132/33kV                | 2 x 20 MVA                |
| 14 | Kalunga                      | 132/33kV                | 2 x 20 MVA                |
| 15 | Barbil                       | 132/33kV                | 2 x 20 MVA                |
| 16 | Udala                        | 132/33kV                | 2 x 12.5 MVA              |
| 17 | Nuapada                      | 132/33kV                | 2 x 12.5 MVA              |
| 18 | Dabugaon                     | 132/33kV                | 2 x 12.5 MVA              |
| 19 | Padampur                     | 132/33kV                | 2 x 12.5 MVA              |
| 20 | Kuchinda                     | 132/33kV                | 2 x 12.5 MVA              |
| 21 | Bhawanipatna                 | 132/33kV                | 2 x 12.5 MVA              |
| 22 | Boudh                        | 132/33kV                | 2 x 12.5 MVA              |
|    |                              |                         |                           |

|   | Major Lines                                                                                             | Length<br>( Ckt Km ) |
|---|---------------------------------------------------------------------------------------------------------|----------------------|
| 1 | 220 kV Bidanasi-Cuttack DC Line                                                                         | 20.84                |
| 2 | 220 kV Bolangir-Kesinga DC Line                                                                         | 160                  |
| 3 | 132 kV Paradeep-jagatsinghpur SC Line                                                                   | 56.073               |
| 4 | Conversion of 220 kV Balimela-Jayanagar 3 <sup>rd</sup> Ckt into Multicircuit Line in the same corridor | 190                  |

As on 01.01.09

## **ANNEXURE : VI**

### **SUMMARY OF THE TRANSMISSION PLANNING FOR 11<sup>TH</sup> PLAN PERIOD**

To meet a peak demand of 4459 MW during 2011-12 with reliability and redundancy as per Central Electricity Authority (CEA) norms the following are under consideration .

- Additional 5 nos. of 400 kV sub-stations need to be created.
- 15 nos. of 220 kV sub-stations have been proposed with 3 sub-stations as a part of 400kV system, 2 sub-stations with 220/33 kV system and 1 as a switching station.
- 31 nos. of 132 kV sub-stations are proposed with 2 sub-stations as a part of 400/220 kV system and 4 as a part of 220 kV system.
- Proposed capacity addition at different voltage levels are as under :

| <b>Transformation Capacity</b> |               |                              |                                          |                      |
|--------------------------------|---------------|------------------------------|------------------------------------------|----------------------|
| Sl No.                         | Rated Voltage | Existing Capacity<br>( MVA ) | Proposed<br>Capacity Addition<br>( MVA ) | Remarks              |
| 1                              | 400/220       | 1260                         | 3465                                     | ICT                  |
| 2                              | 220/132       | 3300                         | 4720                                     | Auto-<br>Transformer |
| 3                              | 220/33        | 120                          | 220                                      | Power<br>Transformer |
| 4                              | 132/33        | 3335                         | 2975.5                                   | Power<br>Transformer |
| <b>Total</b>                   |               | <b>8015</b>                  | <b>11380.5</b>                           |                      |